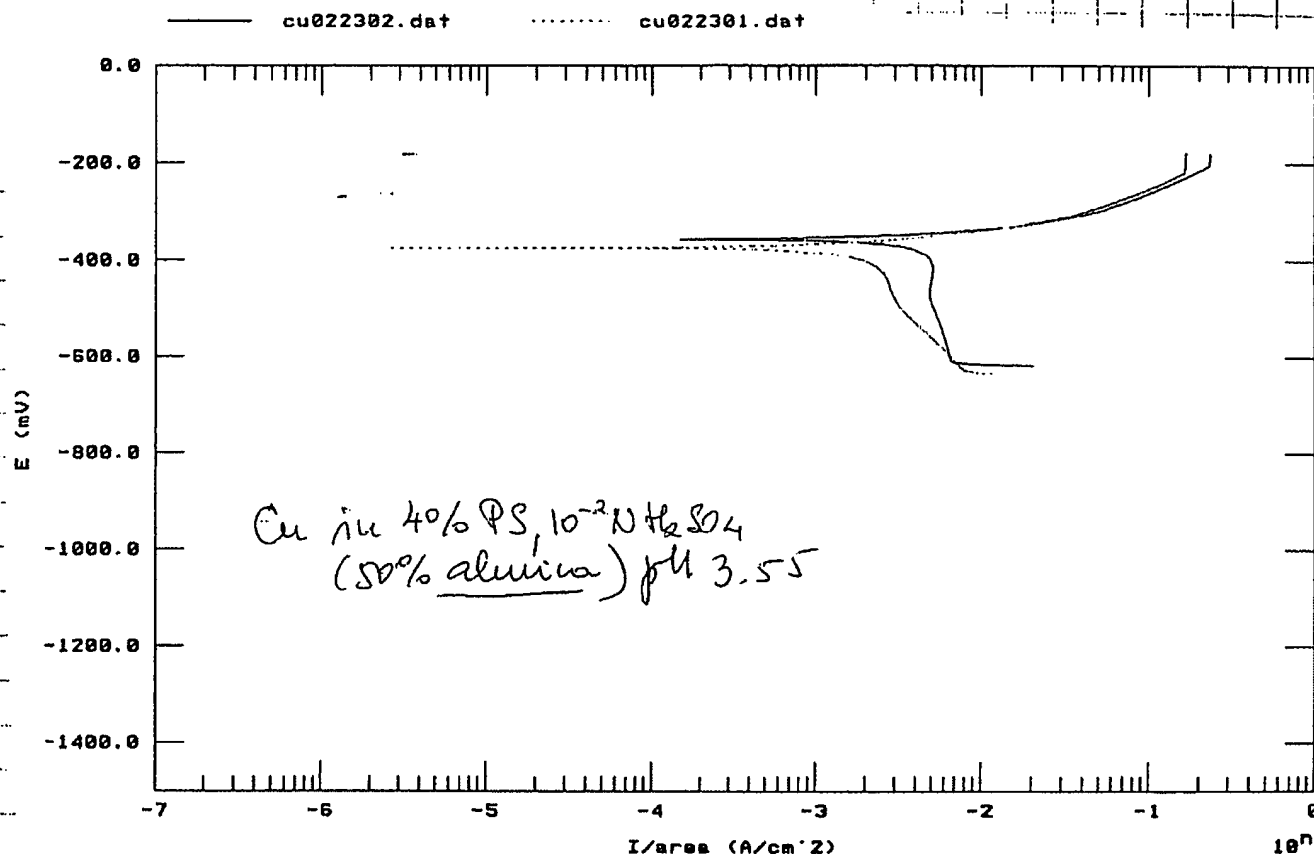




All of the tests today were conducted on copper rid in slurries prepared with alumina. The following was observed:  
 1) alumina has not altered the observed kinetics in ferrous sulfate/sulfuric acid slurry (Figure below)



2) Peroxide is an oxidizer which without added acid shows pH of close to 5. Solution forms Cu, with rates below 200 A/min. Addition of acids increase Cu dissolution but at the most in sulfuric acid pH 2.47, the chemical rate is still well below  $1 \times 10^{-2}$  A/cm².

3) Important: 9%  $H_2O_2$ , 2% oxalic acid pH 1.91 shows very interesting kinetics: fast dissolution w/ abrasion and excellent passivation after abrasion. Figure on p 20.

Signed

Date

V. K. B.

Understood and Witnessed

Signed

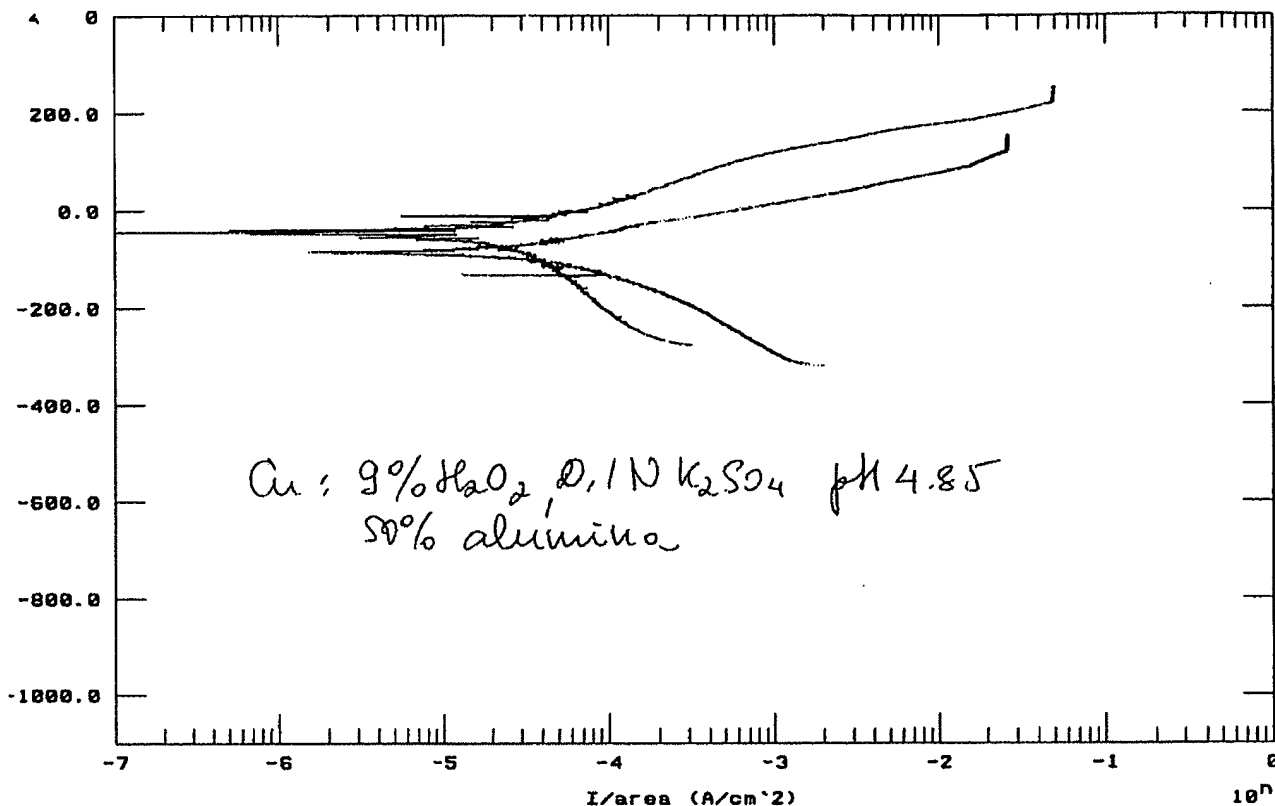
Date

## Cabot Research Notebook

7376- 19

cu022312.dat

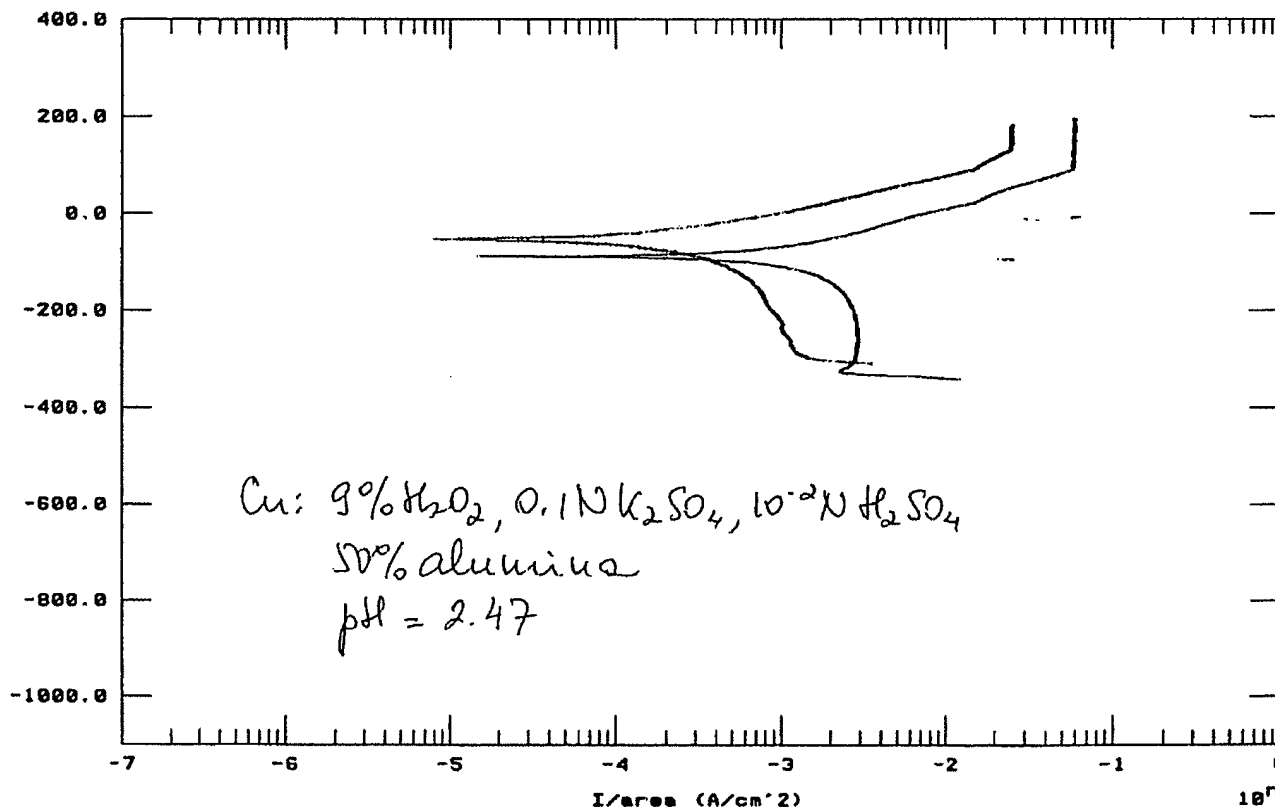
cu022311.dat



Cu: 9% H<sub>2</sub>O<sub>2</sub>, 0.1N K<sub>2</sub>SO<sub>4</sub> pH 4.85  
50% alumina

cu022314.dat

cu022313.dat



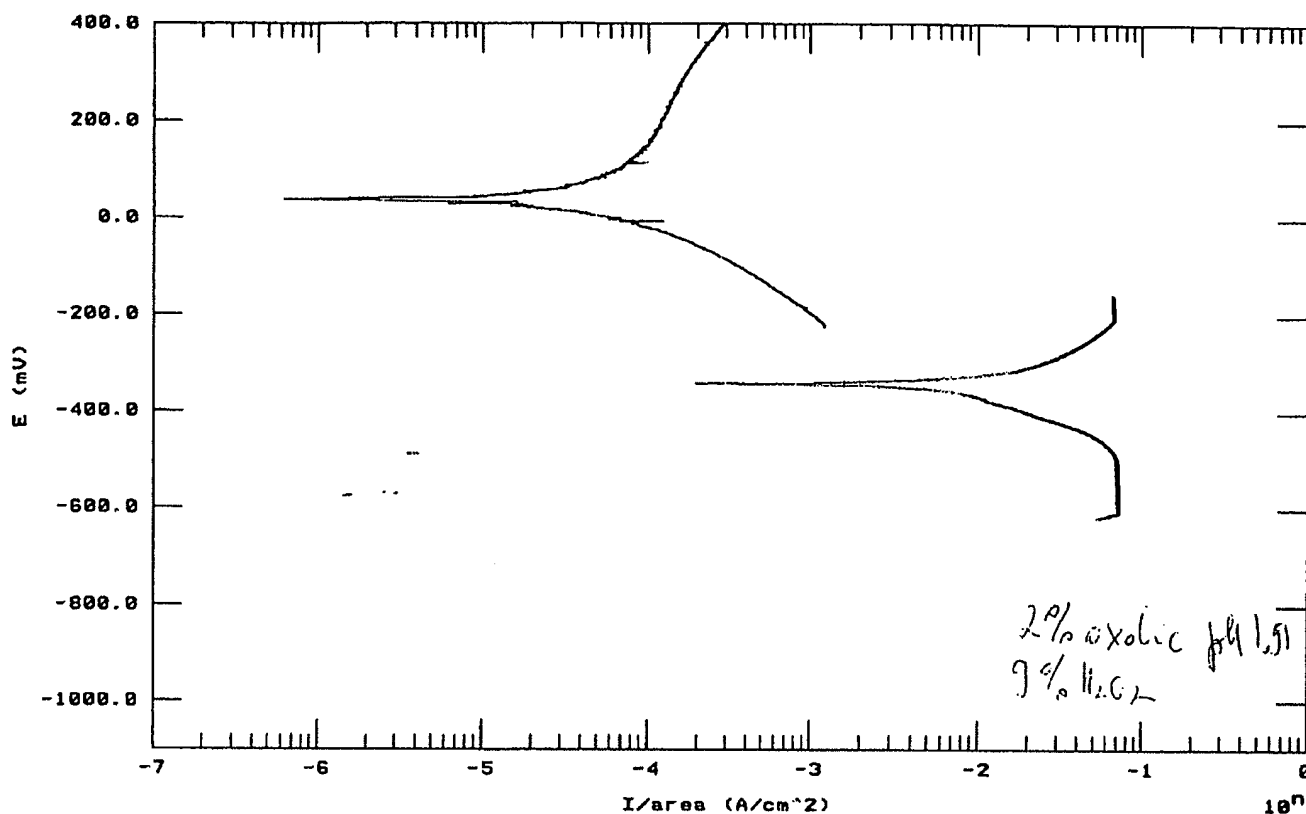
Cu: 9% H<sub>2</sub>O<sub>2</sub>, 0.1N K<sub>2</sub>SO<sub>4</sub>, 10<sup>-2</sup>N H<sub>2</sub>SO<sub>4</sub>  
50% alumina  
pH = 2.47

Signed *Thad D.*

Understood and Witnessed

cu022320.dat

cu022319.dat



Feb 26, 1996

Ti was tested in persulfate/oxalic acid (i.e. Cu "slurry" without Alkyl Aluminum fluoride)  
 very low Ti dissolution rate ( $< 1 \times 10^{-3} \text{ A/cm}^2$ ) increases to about  $3 \times 10^{-2}$  or 6000 A/min with Aluminum fluoride.  
 Concern: Ti is not repassivating in fluoride solutions

Cu in the same solution is still slurry the same kinetics with average rate of  $2 \times 10^{-4} \text{ A/cm}^2$ ...

Cu Au Fe(NO<sub>3</sub>)<sub>3</sub> with BTA and NLS shows controllable chemistry: there is significant "passivation" with BTA. But NLS, even in amount of 0.002%, diminishes the effect of BTA. Controllable chemistry! Figure on p 22.

Signed *W. H. Brown*  
 Date

Understood and Witnessed  
 Signed  
 Date